



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,268	12/15/2000	Dennis K. Lieu	8864/23	1640

757 7590 05/31/2002

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, IL 60610

EXAMINER

WAKS, JOSEPH

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 05/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/738,268	LIEU ET AL.
	Examiner	Art Unit
	Joseph Waks	2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 19 April 2002.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,3-24,28-37,49-57 and 59-78 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 30-37 and 57 is/are allowed.

6) Claim(s) 1, 3-24,49-57, 59-78 is/are rejected.

7) Claim(s) 28 and 29 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 15 November 2000 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement filed on July 27, 2001 has been placed in the application but the examiner will not consider references. Applicant(s) inundated the Examiner with a large volume of prior art that is not material and may obscure a single reference that is material and thus may be effective as improper as withholding a material reference. *Ex Parte Morning Surf Corp.*, 230 USPQ 446, and *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.*, 359 F. Supp. 948, 175 USPQ 260 (S.D. Fla. 1972).

Allowable Subject Matter

2. The indicated allowability of claim 21 is withdrawn in view of the newly discovered reference(s) to **Nakamura et al. (US 5,459,190)**. Rejections based on the newly cited reference(s) follow.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the shaft having the magnet connected thereto as recited in claim 49 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 49-51** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed feature of the shaft having the magnet connected thereto is not supported by drawings and specification.
6. **Claims 49-51** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. For the reasons indicated above one skilled in the art would not be able to make and/or use the invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
8. **Claims 1, 4-10, 18, 20-24, 52, 56, 59-78** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katakura et al. (US 5,241,229)** in view of **Nakamura et al. (US 5,459,190)** and **Aharoni (US 4,390,649)**.

Katakura et al. disclose in Figures 1 and 2 a magnetic drive with a spindle motor having a baseplate 11 or 31, a shaft 14 or 34 supported by the baseplate, a stator assembly spaced from

the baseplate and including a laminated core 18 or 38 having poles surrounded by windings 19 or 39 and rigidly attached to the baseplate with support member 12 or 32, an injection molded material 22 or 42 secured to the baseplate in the space between the stator and the baseplate, encapsulating the windings and being in intimate contact with the baseplate, and a hub 35 supported by the shaft and having a magnet 37. However, **Katakura et al.** fail to disclose the thermoplastic material having a modulus of elasticity of 1,000,000 psi at 25°C.

Nakamura et al. disclose in Figure 1 and column 3, lines 44-64 a magnetic drive with a base 11, a stator assembly spaced from the baseplate and including a laminated core 9 having poles surrounded by windings 10, an injection molded material 6 secured to the base in the space between the stator and the base and having linear thermal expansion of $1.97 \times 10^{-5}/^{\circ}\text{C}$ or 1.09×10^{-5} in/in $^{\circ}\text{F}$ and thermal conductivity of 0.0040 to 0.0055 cal/s $^{\circ}\text{C}$ or 1.67 watts/m $^{\circ}\text{K}$ (Re column 5, Table 1) for the purpose of protecting the motor from adverse working conditions such as mechanical stresses due to a pulsating torque and heat generated during motor operation (Re column 1, lines 21-30) while avoiding long curing time or deterioration of the insulating properties of the material caused by de-bonding resulted by vibration or thermal cycles the material is exposed during operation (Re column 1, lines 31-67 and column 2, lines 1-25).

Aharoni discloses in column 8 table VII thermoplastic materials having modulus of elasticity between 1.00-1.38 million psi.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the magnetic drive as taught by **Katakura et al.** with the thermoplastic in lieu of thermosetting material as taught by **Nakamura et al.** for the purpose of protecting the motor from adverse working conditions such as mechanical stresses due to a

pulsating torque and heat generated during motor operation while avoiding long curing time or deterioration of the insulating properties of the material caused by de-bonding resulted by vibration or thermal cycles the material is exposed during operation and to and dissipate the heat from the stator.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to select the vibration dampening thermoplastic material having specific dampening characteristics and elasticity (such as the material disclosed by **Aharoni**) for the specific operating conditions or the dielectric strength for the specific power supply, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

9. **Claims 1, 4-10, 18, 19-24, 52, 54-56, 59-78** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dunfield et al. (US 5,774,974)** in view of **Nakamura et al. (US 5,459,190)** and **Aharoni (US 4,390,649)**.

Dunfield et al. disclose in Figure 6 a magnetic drive with a spindle motor having a baseplate 52, a shaft 56, a stator assembly 50 including a laminated core having poles surrounded by windings 64 and being rigidly attached to the baseplate (Re column 3, lines 48-58) with support member 56, an injection molded material 78 encapsulating the windings and in intimate contact with the baseplate, and a hub 76 supported by the shaft by ball bearings (Re elements 116 and 118 in Figure 7) and having a magnet 70. However, **Dunfield et al.** fail to disclose the thermoplastic material having a modulus of elasticity of 1,000,000 psi at 25 °C.

Nakamura et al. disclose in Figure 1 and column 3, lines 44-64 a magnetic drive with a base 11, a stator assembly spaced from the baseplate and including a laminated core 9 having poles surrounded by windings 10, an injection molded material 6 secured to the base in the space between the stator and the base and having linear thermal expansion of $1.97 \times 10^{-5}/^{\circ}\text{C}$ or 1.09×10^{-5} in/in $^{\circ}\text{F}$ and thermal conductivity of 0.0040 to 0.0055 cal/s $^{\circ}\text{C}$ or 1.67 watts/m $^{\circ}\text{K}$ (Re column 5, Table 1), for the purpose of protecting the motor from adverse working conditions such as mechanical stresses due to a pulsating torque and heat generated during motor operation (Re column 1, lines 21-30) while avoiding long curing time or deterioration of the insulating properties of the material caused by de-bonding resulted by vibration or thermal cycles the material is exposed during operation (Re column 1, lines 31-67 and column 2, lines 1-25).

Aharoni discloses in column 8 table VII thermoplastic materials having modulus of elasticity between 1.00-1.38 million psi.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the magnetic drive as taught by **Dunfield et al.** with the thermoplastic in lieu of thermosetting material as taught by **Nakamura et al.** for the purpose of protecting the motor from adverse working conditions such as mechanical stresses due to a pulsating torque and heat generated during motor operation while avoiding long curing time or deterioration of the insulating properties of the material caused by de-bonding resulted by vibration or thermal cycles the material is exposed during operation, and to dissipate the heat from the stator.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to select the vibration dampening thermoplastic material having specific

dampening characteristics and elasticity (such as the material disclosed by **Aharoni**) for the specific operating conditions or the dielectric strength for the specific power supply, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

10. **Claims 3, 13 and 53** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katakura et al. US 5,241,229** or **Dunfield et al. (US 5,774,974)** in view of **Nakamura et al. (US 5,459,190)** and **Aharoni (US 4,390,649)** as applied to claim 1 above and further in view of **Dunfield et al. (US 5,694, 268)**.

The combined drive discloses all elements essentially as claimed. However, it does not disclose the baseplate made of aluminum and the rotor magnet being positioned inside the stator assembly.

Dunfield et al. (US 5,694, 268) discloses in Figure 9 and Figures 1-6 a baseplate 266 made of aluminum and the rotor magnet 70 or 166 positioned internally in the stator as a well known in the art material and magnets configuration used in spindle motors.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined drive and to provide the baseplate made of aluminum and the rotor positioned internally in the stator as taught by **Dunfield et al. (US 5,694, 268)** for the purpose of providing a light and sturdy plate having good thermal conductivity and to save the amount of expensive magnetic material (like rare earth magnets for example).

11. **Claims 11, 12, 14, 16, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katakura et al. US 5,241,229** or **Dunfield et al. (US 5,774,974)** in view of **Nakamura et**

al. (US 5,459,190) and Aharoni (US 4,390,649) as applied to claim 10 above and further in view of Kuwert et al. (US 5,986,365).

The combined drive discloses all elements essentially as claimed. However, it does not disclose the aluminum baseplate having a plurality of holes through, and the hub comprising an outer member having an inside aperture with a steel ferrule inside the aperture with a bearing interposed between the shaft and the ferrule.

Kuwert et al. discloses in the Figure a drive with a baseplate 1 provided with a plurality of holes 13 filled with thermoplastic material 16 for the purpose of locking and securing the material in the holes and a ferrule inside an aperture in the rotor hub with a bearing interposed between the ferrule and the shaft that is a well known in the art spindle motor structure that allows to reduce the weight of the rotor while providing sufficient strength for supporting the bearing.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined drive and to provide the baseplate having a plurality of holes through and the ferrule inside an aperture in the rotor hub with a bearing interposed between the ferrule and the shaft as taught by **Kuwert et al. (US 5,694, 268)** for the purpose of locking and securing the material in the holes and to provide the well known in the art spindle motor structure that allows to reduce the weight of the rotor while providing sufficient strength for supporting the bearing.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to provide the hub made of aluminum and the ferrule made of steel, since it has been held to be within the general skill of a worker in the art to select a known material on

the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

12. **Claims 14-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katakura et al. US 5,241,229** or **Dunfield et al. (US 5,774,974)** in view of **Nakamura et al. (US 5,459,190)** and **Aharoni (US 4,390,649)** as applied to claim 10 above and further in view of **Mori et al. (US 5,325,004)**.

The combined drive discloses all elements essentially as claimed. However, it does not disclose the hub comprising an outer member having an inside aperture with a steel ferrule inside the aperture having magnets attached to the ferrule and a bearing interposed between the shaft and the ferrule.

Mori et al. discloses in the Figures 1 and 4 a drive with an aluminum baseplate 14 and a steel ferrule 122 inside an aperture in the aluminum rotor hub 116 with a bearing 134 interposed between the ferrule and the shaft 110 for the purpose of minimizing the eccentricity in rotation center of the rotor and enclosing the magnetic flux circuit with the ferrule used also as a back iron for the magnet.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined drive and to provide the ferrule inside an aperture in the rotor hub with a bearing interposed between the ferrule and the shaft as taught by **Mori et al.** for the purpose of providing the well known in the art spindle motor structure that allows to reduce the weight of the rotor while providing sufficient strength for supporting the bearing, to minimize the eccentricity in rotation center of the rotor and to enclose the magnetic flux circuit with the ferrule used also as a back iron for the magnet.

13. **Claims 49-51** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Pabst (US 6,195,226)** in view of **Nakamura et al. (US 5,459,190)**.

Pabst discloses a spindle motor comprising a baseplate 3, a shaft supported by the baseplate, a coreless stator comprising windings 22 encapsulated in plastic material 23, a hub 9 having magnet 26 and a flux return ring 27 wherein the stator is located between the magnet and the flux ring. However, **Pabst** does not disclose the plastic being a thermoplastic material.

Nakamura et al. Disclose the stator winding encapsulated in thermoplastic material for the purpose of for the purpose of protecting the stator from adverse working conditions such as mechanical stresses due heat generated during motor operation (Re column 1, lines 21-30) while avoiding long curing time.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the motor as taught by **Pabst** and to provide the coreless stator with windings encapsulated in thermoplastic material as taught by **Nakamura et al.** for the purpose of protecting the stator from adverse working conditions such as mechanical stresses due heat generated during motor operation while avoiding long curing time as would be required by a thermosetting resin for example.

Allowable Subject Matter

14. **Claims 28, and 29** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re claims 28 and 29, the feature of the baseplate comprising a stiff thermoplastic material having modulus of elasticity at least 1,000,000 psi and a metal plate substantially encapsulated in

the thermoplastic material, in combination with the other limitations present, are neither disclosed nor taught by the prior art of record.

15. **Claims 31-37, and 57** are allowed.

The feature of the baseplate comprising a stiff thermoplastic material having modulus of elasticity at least 1,000,000 psi and a metal plate substantially encapsulated in the thermoplastic material, in combination with the other limitations present, are neither disclosed nor taught by the prior art of record.

Response to Arguments

16. Applicant's arguments with respect to claims 1-6, 7, 8, 10-21, 23, 24, 49-56, 58 have been considered but are moot in view of the new ground(s) of rejection.

17. Applicant's arguments filed on April 19, 2002 have been fully considered but they are not persuasive.

In response to applicants reasoning for the extensive IDS submitted for Office consideration examiner directs applicant's attention that the 37 CFR § 1.56 defining the purpose of duty to disclose information material. The intent as clearly set by the 37 CFR § 1.56 is to serve the public interest and to assist the most effective patent examination by providing all information known to the applicants to be material to patentability as defined in this section. It also states that there is no duty to submit information which is not material to the patentability of any existing claim. Applicant submitted numerous references not related to this particular application such as; semiconductor chips and substrates, variety of motors not related to the encapsulated or molded spindle type motors, miniature and piezoelectric motors and more. Such random and non-discriminative selection of prior art is detrimental to prompt and efficient

prosecution of application. Examiner directs applicant's attention that to satisfy the need to avoid an argument by an infringer, incorporating related patents an/or applications in pending application may provide a significant amount of information more efficiently. Applicant is advised to use both methods i.e. limiting the prior art to be submitted in IDS to documents directly related to the application and incorporating related applications and patents in this pending application, in order to avoid the situation where inadvertently significant related information may be obscured by sheer volume of unrelated references.

Re claim 4, In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the support member being a separate part from the base plate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, the element 12 in Katakura et al. secured to the base by sheer fact of being integral with the base. Furthermore, it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Prior Art

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Communication

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Waks whose telephone number is (703) 308-

1676. The examiner can normally be reached on Monday through Thursday 8 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.


JOSEPH WAKS
PRIMARY PATENT EXAMINER
TC-2800

JW
May 30, 2002